TAXONOMIC STATUS OF *HYMENOCALLIS CHOCTAWENSIS* AND *HYMENOCALLIS PUNTAGORDENSIS* (AMARYLLIDACEAE)

GERALD L. SMITH

Biology Department
High Point University, University Station
High Point, NC 27262-3598, U.S.A.

MARK A. GARLAND

Office of Environmental Services
Florida Department of Environmental Protection
3900 Commonwealth Blvd., M.S. 140
Tallahassee, FL 32399-3000, U.S.A.

ABSTRACT

Two poorly known species of spider-lilies described by Hamilton Traub, *Hymenocallis choctawensis* and *Hymenocallis puntagordensis*, are shown to be worthy of recognition. Distinguishing characteristics and distributions are presented. Somatic chromosome numbers and, for the first time, karyotypes of these species are presented. A short key is provided to help distinguish *Hymenocallis choctawensis* from taxa with which it is likely to be confused.

KEY WORDS: *Hymenocallis*, Florida, distributions, karyotypes

RESUMEN

Se demuestra que dos especies poco conocidas de himenocálide ("lirio araña") descritas por Hamilton Traub, *Hymenocallis choctawensis* y *Hymenocallis puntagordensis*, son dignas de reconocimiento. Se presentan las características distintivas y las distribuciones. Se dan los números somáticos de cromosomas, y, por primera vez, han sido preparados los cariotipos de estas especies. Se proporciona una clave corta para ayudar a distinguir *Hymenocallis choctawensis* de los taxa con los que puede confundirse fácilmente.

PALABRAS CLAVE: *Hymenocallis*, Florida, distribuciones, cariotipos

The species of *Hymenocallis* native to the United States have perplexed those who have tried to identify either herbarium specimens or plants in the field. The puzzlement, at least in part, is due to the lack of a comprehensive modern treatment that deals with the myriad of published spider-lily names and establishes distinctive species concepts. Godfrey and Wooten (1979) emphasized the need for quality herbarium vouchers of native populations throughout the southeastern United States and for published information about the characteristics of the plants in the wild. Such information would provide the basis for a treatment emphasizing field characteristics and distinctive features recognizable on herbarium specimens.

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Smith and Flory (1990) and Smith and Darst (1994) presented studies on selected species of *Hymenocallis* that were based on field, herbarium, and cytological data. This approach was successful in defining the species under study and holds promise for clarifying the taxonomy of many of the southeastern *Hymenocallis* species.

Traub (1962) published a key to the species of *Hymenocallis* but unfortunately provided little nomenclatural background concerning his chosen names or information about the plants as they would be found growing in the wild. His treatment did not deal with a number of published names such as *Hymenocallis crassifolia* Herb. and *H. liriosme* (Raf.) Shinners, and we can only conclude that he considered them synonyms or invalid names. However, Traub did have a large greenhouse collection of spider-lilies, and he displayed a remarkable ability to recognize different species of *Hymenocallis*.

Traub's understanding of native southeastern spider-lilies was considerably enhanced by the field endeavors of Mary G. Henry (Henry 1950; Traub 1962). Driven by her devoted chauffeur, Ernest Perks, in a Cadillac outfitted with oversized tires for field travel and redesigned for collecting plants and recording field observations, Mrs. Henry acquired an extensive bulb collection. She often prepared herbarium vouchers from the populations from which she acquired a bulb sample. Mrs. Henry sent Traub bulbs of each collection so that he could cultivate them, bring them into flower, and view the specimens firsthand. When Traub recognized a distinctiveness of form in some of these collections, he described new species. Traub (1962) published five new species of *Hymenocallis* based on Mary G. Henry collections. Traub also relied on Walter S. Flory and his students at the Blandy Experimental Farm of the University of Virginia for cytological information about his bulb collections.

Hymenocallis choctawensis Traub

Hymenocallis choctawensis is one of the species that Traub (1962) described from a collection made by Mrs. Henry. An investigation has led us to conclude firmly that *Hymenocallis choctawensis* is a dominant ground cover species along river systems of the Florida panhandle from the Apalachicola River westward to southeastern Mississippi.

In 1984 the authors made pressed and living collections of a *Hymenocallis* along a tributary of the Choctawhatchee River in Walton County, Florida. This population appeared most similar to specimens in the Florida State University herbarium identified as *H. caroliniana* (L.) Herb. *Hymenocallis caroliniana* was reported to have chromosome numbers of $2n=52$ or 54 (Flory 1975, 1976), so we expected that we would determine these numbers from our collection. Instead, the first author established that the somatic

number of our collection was $2n=44$, and the karyotype exhibited 36 two-armed and 8 telocentric chromosomes (Fig. 1). The identity of this collection with what had been called *H. caroliniana* now seemed remote because of this difference in chromosome number. Within the genus, the number $2n=44$ had also been reported for *Hymenocallis coronaria* (J.Le Conte) Kunth, but collections cytologically examined by Schmidhauser (1954) and Joye and Smith (1993) revealed 32 two-armed and 12 telocentric chromosomes in this species. Our collection thus appeared to differ from all other known species of *Hymenocallis*.

In examining names used for *Hymenocallis* in the western Florida panhandle, we discovered that Traub had proposed *H. choctawensis* for a Mary G. Henry collection. Mrs. Henry's field diaries, made available to the authors by her daughter, Josephine deN. Henry, revealed that the type bulb collection was made along a tributary of the Choctawhatchee River in Walton County, very near our collection. Our specimens were similar morphologically to the type of *H. choctawensis* at MO: most notably, our specimens and the type possessed oblanceolate leaves, rhizomatous bulbs, long-spreading perianth segments and triangular bracts that are not long-tapering.

We concluded that our collection, as well as many of the specimens filed as *H. caroliniana* at FSU, were specimens of *H. choctawensis*. We made field trips to a number of sites where "*H. caroliniana*" had been collected and gathered bulbs and vouchers. Angus Gholson of Chattahoochee, Florida, also sent bulbs. Eventually we determined the chromosome number and karyotype of several of these populations (Table 1). It was gratifying to see the number $2n=44$ repeatedly from collections that we had identified as *H. choctawensis* on morphological grounds. Based on comparisons of arm measurements from figures prepared from several different collections, we observed uniformity in both the two-armed and telocentric chromosome types.

The measurements below were taken from pressed, dried herbarium specimens with the exceptions of the seed and fruit dimensions, which were measured on fresh specimens. The pressed specimens that were studied were either received on loan or examined during herbarium visits, or were made by the authors. All qualitative information came from observations of plants in the field or cultivated in the greenhouse.

Hymenocallis choctawensis Traub, Plant Life 18:70. 1962. (**Fig. 2**). TYPE: UNITED STATES. FLORIDA: Walton Co.: from bulbs collected by Mrs. Mary G. Henry, specimen *Traub 263 a + b* (HOLOTYPE: MO! ex TRA).

Bulb rhizomatous, ovoid to subglobose, 3–6 × 2–5 cm, neck 2–8 cm, basal plate 1.5–5 cm; tunica gray-brown. *Leaves* 5–9, arching upward to suberect, shiny green, oblanceolate, channeled proximally, blade gradually tapering towards the base, 3.5–7.5(–8.5) dm × 2.5–6 cm, coriaceous, apex acute. *Scape* 3.5–6.2 dm, two-edged, glaucous; 2 or 3 scape bracts enclosing

FIG. 1. Chromosomes of *Hymenocallis choctawensis*, $2n=44$. A. Mitotic metaphase, *Smith & Garland 1432*. B. Karyotype, 36 two-armed chromosomes, 8 telocentrics. The scale equals 10 micrometers.

the buds, 3–4.5(–6) cm × 15–20 mm; each flower with a subtending bracteole, 2.8–3.7 × 10–15 mm. *Flowers* 2–8(–12), opening sequentially, highly fragrant; perianth segments slightly ascending to spreading, white, tinged green on keel and at base, 8–12 cm × 5–9 mm; perianth tube green, 7–11 cm; staminal cup white with small yellow-green eye, funnelform, gradually spreading, shortly tubulose below, 2.5–4 × 4–5 cm; margin irregularly bi-or tridentate, projections not prominent between the free filaments; free filaments suberect, inserted on a depression, white, 2.5–4 cm, anthers 1.5–2.5 cm, pollen golden; style green in distal half, fading into white proximally, 13–18 cm; ovary ovoid, 10–15 × 5–10 mm; ovules 1–3 per locule. *Fruit* broadly trigonous to subglobose, 3–4 × 3 cm. *Seeds* obovoid to elongated, 2–3(–4) × 1.4–2.3 cm. Somatic chromosome number $2n=44$.

TABLE 1. Chromosome number determinations in *Hymenocallis choctawensis*. *All populations are $2n=44$ with 36 two-armed chromosomes and 8 telocentric chromosomes.

Collection	Site	$2n$
Smith & Garland 1432	N of Red Bay, Walton Co., FL	44(36 + 8T)*
Smith & Anderson 1454	Montgomery Slough, Franklin Co., FL	44
Smith & Anderson 1455	Ft. Gadsden State Park, Franklin Co., FL	44
Smith 1641	Chipola River floodplain, SR-20, Calhoun Co., FL	44
Smith 1642	Apalachicola River floodplain, SR-20, Calhoun Co., FL	44
Gholson 10923	Apalachicola River at Flat Creek, Gadsden Co., FL	44
Gholson & Braxton s.n.	Chipola River N of Marianna, Jackson Co., FL	44
Gordon s.n.	Pascagoula River, George Co., MS	44

Hymenocallis choctawensis Traub, the Florida panhandle spider-lily, is distributed westward from the Apalachicola River and its tributaries to the lower Pascagoula River in southern Mississippi. It extends northward into southern Alabama and southwestern Georgia (Fig. 3). Flowering time, as observed and documented from herbarium sheets, occurs from spring to early summer. Distinguishing characteristics are rhizomatous bulbs, large, oblanceolate, shiny green leaves, and showy inflorescences. The long, white perianth segments that spread from the base of the funnelform staminal cup at right angles to the floral axis are especially distinctive characteristics.

The rhizomes developing from the bulbs are tubular propagators arising horizontally from the upper region of the basal plate. Dense colonial stands form as a result of vigorous rhizome production. The presence or absence of these structures have been reported previously by Small (1933), Sealy (1954), and Herndon (1987).

Hymenocallis choctawensis is found as the dominant ground cover on the banks of alluvial, spring-run, and blackwater streams, and in the floodplain forests and floodplain swamps beyond. These areas are dominated by a canopy of *Taxodium distichum* (L.) Rich., *Acer rubrum* L., *Nyssa aquatica* L., *Carya aquatica* (Michx. f.) Nutt., *Magnolia virginiana* L. var. *australis* Sarg., *Quercus laurifolia* Michx., *Q. lyrata* Walt., *Q. nigra* L., *Liquidambar styraciflua* L., *Ulmus americana* L., *Fraxinus pennsylvanica* Marsh., *Celtis laevigata* Nutt. and *Pinus elliottii* Engelm. Small trees include *Gleditsia aquatica* Marsh., *Ostrya virginiana* (Mill.) K. Koch, *Carpinus caroliniana* Walt., *Cornus foemina* Mill., and *Planera aquatica* J. F. Gmel. Shrubs occasionally observed were *Cephalanthus occidentalis* L., *Crataegus viridis* L., *Ilex decidua* Walt, *Cyrilla racemiflora* L., *Viburnum obovatum* Walt., *V. nudum* L., *Itea virginica* L., *Sebastiania fruticosa* (Bartr.) Fern., *Hypericum galioides* Lam., *Vaccinium corymbosum* L., *Arundinaria gigantea* (Walt.) Muhl., and *Sabal minor* (Jacq.) Pers. Woody vines observed were *Campsis radicans* (L.) Seem. ex Bureau,

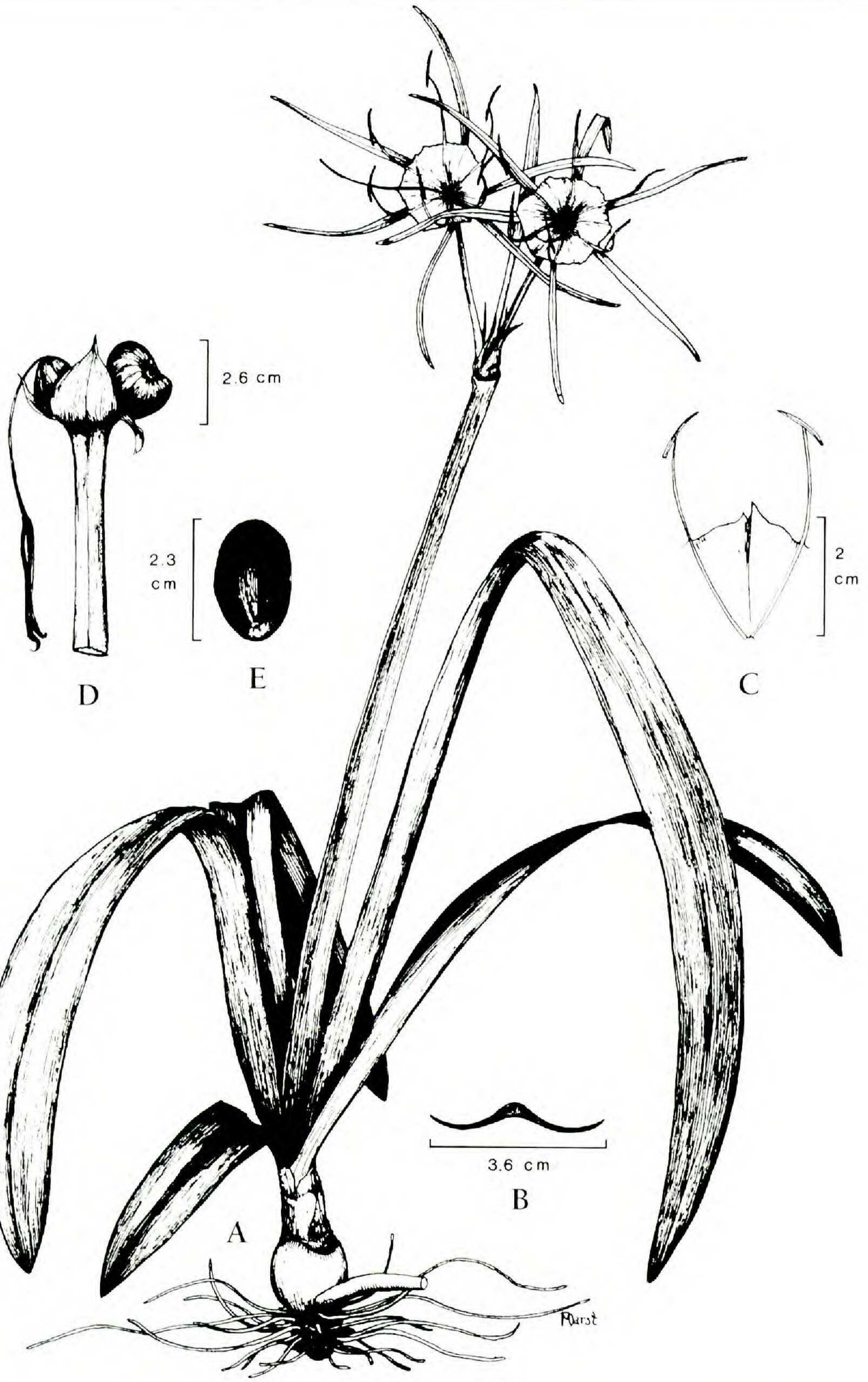

FIG. 2. *Hymenocallis choctawensis* (*Smith & Garland 1432*). A. Habit B. Leaf cross-section. C. Section of staminal cup. D. Fruit. E. Seed.

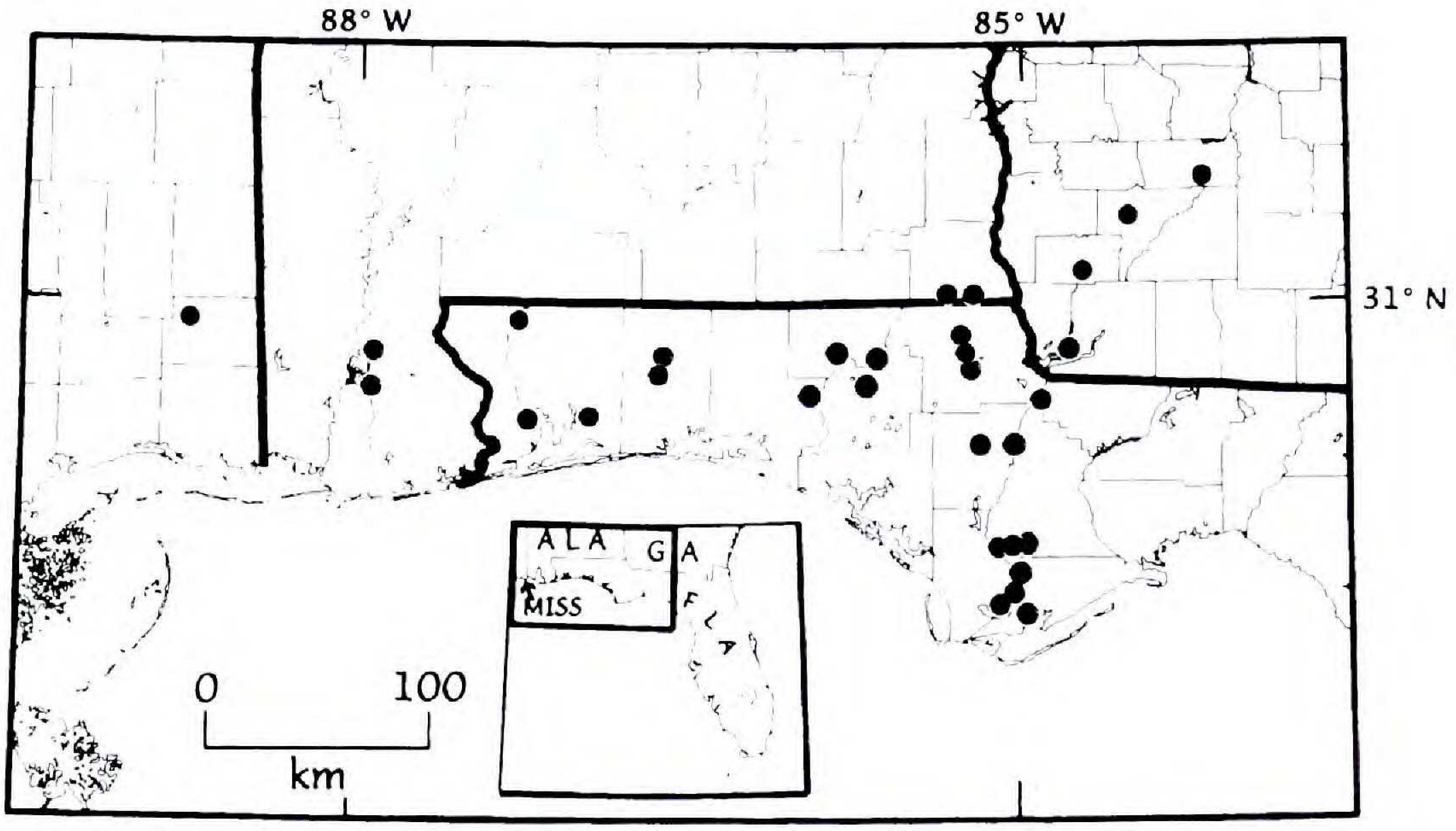

FIG. 3. Distribution of *Hymenocallis choctawensis*.

Ampelopsis arborea (L.) Koehne, *Toxicodendron radicans* (L.) Kuntze, *Lonicera japonica* Thunb., *Brunnichia ovata* (Walt.) Shinners, *Vitis* spp., and *Smilax* spp. and *Clematis* sp. With *H. choctawensis* are herbs such as species of *Carex* including *C. crus-corvi* Shuttlew. ex Kunze, *C. stipata* Muhl. ex Willd., *C. louisianica* Bailey, *Fimbristylis* spp., *Rhynchospora corniculata* (Lamb.) Gray, *Panicum* spp., *Juncus* sp., *Micranthemum umbrosum* (J. F. Gmel.) Blake, *Lobelia* sp., *Viola* sp., *Justicia ovata* (Walt.) Lindau in Urban var. *lanceolata* (Chapm.) R.W. Long, *Zizaniopsis miliacea* (Michx.) Doell, & Asch., *Asclepias perennis* Walt., *Hypoxis* sp., *Hygrophila lacustris* (Schlecht & Cham.) Nees, *Polygonum* sp., *Sagittaria graminea* Michx., *Pontederia cordata* L., *Alternanthera philoxeroides* (Mart.) Griseb., *Cyperus* spp., *Saururus cernuus* L., *Crinum americanum* L., *Samolus parviflorus* Raf., *Myosotis macrosperma* Engelm., *Woodwardia areolata* (L.) Moore, *Lygodium japonicum* Sw., *Osmunda regalis* L., *Myriophyllum* sp., and *Orontium aquaticum* L.

Representative specimens examined: U.S.A. **ALABAMA. Baldwin Co.**: Historic Blakely State Park, 20 Apr 1985, *Burkhalter & Hodges 9863* (UWFP). GEORGIA. **Baker Co.**: Ichauwaynochaway Creek N of SR-200, 17 May 1993, *Kirkman and Drew 2980* (GA). **Decatur Co.**: Spring Creek, 19 Jun 1991, *Smith, Godfrey & Gholson 1535* (FSU). FLORIDA. **Calhoun Co.**: SR-20 at Chipola River, 26 May 1988, *Smith & Garland 1461* (FSU); SR-20 at Apalachicola River, 25 Jun 1991, *Smith & Moretz 1539* (FSU). **Franklin Co.**: Montgomery Slough, ca. 4.5 air mi NE of Apalachicola, 26 Apr 1985, *Anderson 8030* (FSU). **Gadsden Co.**: confluence of Flat Creek with Apalachicola River, 9 Jun 1984, *Gholson 10923* (FSU, Gholson Herb.). **Holmes Co.**: 4.8 mi W of Chipley, 24 May 1964, *McDaniel 4548* (FSU, IBE). **Jackson Co.**: Hay Spring Run, ca. 5.5 mi W of Greenwood, 26 Apr 1967, *McDaniel 8836* (FSU, IBE); CR-167 at Chipola River, 12 Jun 1991, *Smith & Gholson 1526* (FSU); Spring Creek before confluence with Chipola River, 28 May 1995, *Smith &*

Garland 1650 (FSU). **Okaloosa Co.:** Yellow River, NW of Crestview, 11 May 1974, *Godfrey 73583* (FSU). **Walton Co.:** first stream N of Red Bay on SR-81, 8 May 1959, *Godfrey 58607* (FSU); ca. 3 mi SE of Knox Hill along Choctawhatchee River, 15 May 1983, *Wilhelm 11384* (USF). **Washington Co.:** ca. 2 mi N of Caryville, 10 May 1974, *Godfrey 73518* (FSU, IBE).

Hymenocallis choctawensis is most often misidentified in herbaria as *H. occidentalis* [=*H. caroliniana* of authors, not (L.) Herb.] (Smith et al. 1991). It may also be confused with *Hymenocallis duvalensis*, which is found along floodplains in the Florida panhandle from the upper Ochlockonee River north into Georgia and east across northern Florida. The following key will allow one to distinguish these taxa:

1. Leaves oblanceolate, distinctly wider above the middle before tapering; blades 3.5–7.5(–8.5) dm long, 2.5–6 cm wide.
   2. Leaves coriaceous, nonglaucous; scape bracts 3–4.5(–6) cm long, apex acute but not long-acuminate; bulb ovoid, rhizomatous ..... **Hymenocallis choctawensis**
   2. Leaves noncoriaceous, glaucous; scape bracts 4–7 cm long, apex long-acuminate; bulb globose, nonrhizomatous ..... **Hymenocallis occidentalis**
1. Leaves strap-shaped, not distinctly wider above the middle; blades 2.4–5.5 dm long, 1–2.5 cm wide ..... **Hymenocallis duvalensis**

Hymenocallis puntagordensis Traub

Another *Hymenocallis* species whose identity has been obscure is *H. puntagordensis* Traub (Smith et al. 1994). Traub (1962) based this species on plants he grew from bulbs collected by C.L. Burlingham in Punta Gorda, Florida. A critical examination of the type specimen and a thorough analysis of the original description led to the conclusion that this entity was distinctive and worthy of species status. However, it was perplexing that loans from Florida's major herbaria (FLAS, FSU, FTG, USF) included no specimens that seemed to match Traub's entity.

In August 1993 and again in 1995 we observed *Hymenocallis* around Punta Gorda with many-flowered inflorescences on robust, glaucous scapes, and with 5–8 coriaceous, shiny green, strap-shaped leaves. The most striking features were their small, funnelform staminal cups with distinctive marginal projections. These specimens were similar in both quantitative and qualitative characters to the type of *H. puntagordensis*.

Our original collection, *Smith & Garland 1625*, and the type also shared the same chromosome number, $2n=46$ (Flory 1976; Smith et al. 1994). However, the karyotype of the type collection was unknown. From our collection, the first author prepared a karyotype that showed 34 two-armed chromosomes and 12 telocentric chromosomes (Fig. 4). One of the chromosomes of the largest pair showed a distinct satellite on the short arm in every figure in which this chromosome was clearly observable. From all the

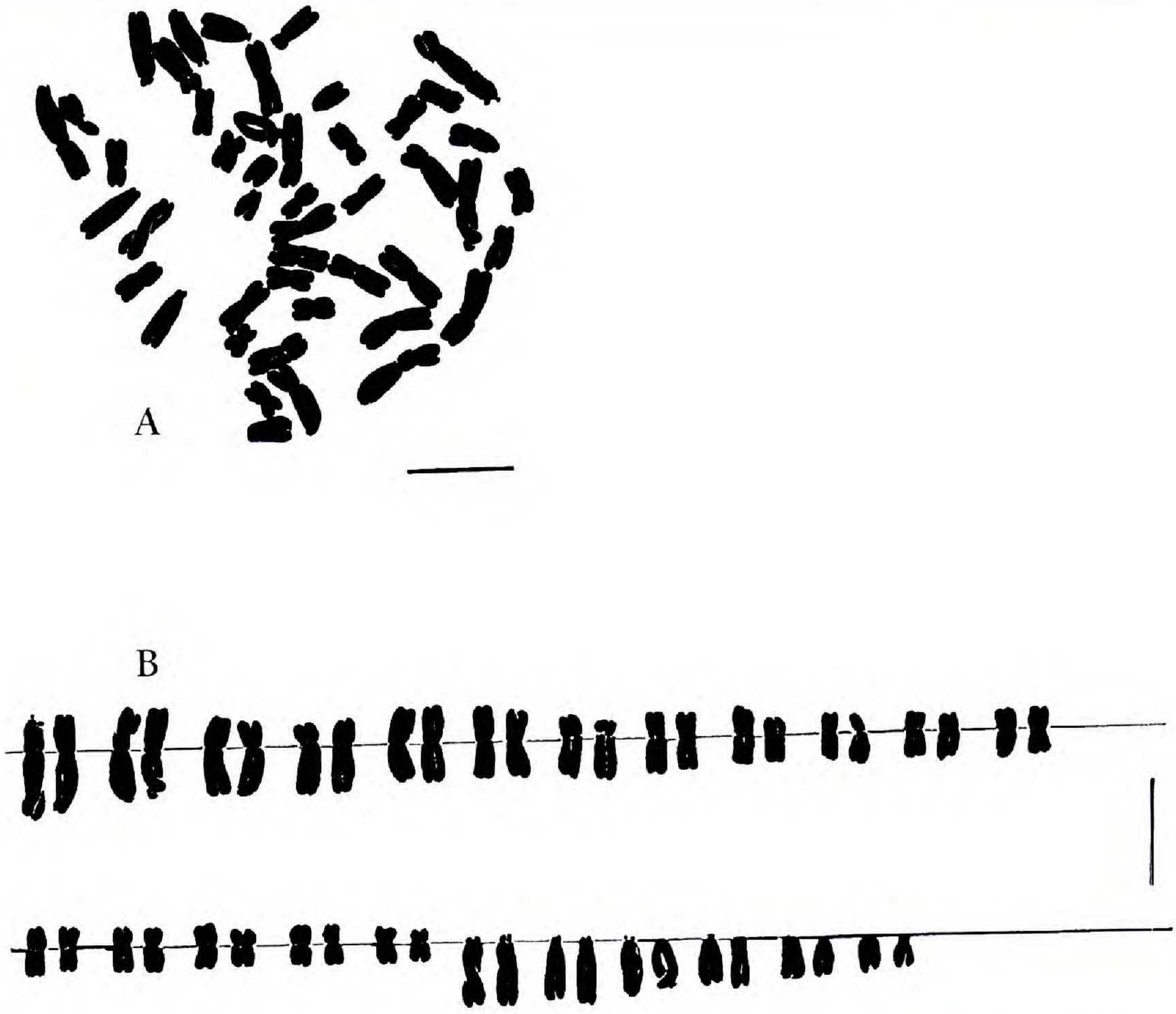

FIG. 4. Chromosomes of *Hymenocallis puntagordensis*, $2n=46$. A. Mitotic metaphase, *Smith & Garland 1625*. B. Karyotype, 34 two-armed chromosomes, 12 telocentrics. The scale equals 10 micrometers.

information available to us, we concluded that our collections were *H. puntagordensis.*

Our collections provided us with bulb characteristics that Traub had not documented for *Hymenocallis puntagordensis*. The bulbs we examined were nonrhizomatous and ovoid, with an elongated neck and a chestnut-brown tunica.

Hymenocallis puntagordensis Traub, Plant Life 18:71. 1962. (**Fig. 5**).

TYPE: UNITED STATES. FLORIDA: Charlotte Co.: from bulbs collected by C.L. Burlingham, specimen *Traub 878 a + b + c* (HOLOTYPE: MO! ex TRA).

Bulb nonrhizomatous, ovoid, 5–8 × 2–4.5 cm, neck long, (5–)8–12 cm, basal plate 1–2 cm; tunica dark-brown. *Leaves* 5–8, evergreen, suberect, shiny green, narrowly strap-shaped, channeled proximally, 3.5–7.5 dm × 1.5–3 cm, highly coriaceous, apex acute. *Scape* 5–6 dm, distinctly two-edged, glaucous; two scape bracts enclosing the buds, 4–6 cm × ca. 15

FIG 5. *Hymenocallis puntagordensis* (*Smith & Garland 1625*). A. Habit. B. Leaf cross-section. C. Inflorescence. D. Section of staminal cup.

mm; each flower with a subtending bract, 3–5.5 cm × 5–10 mm. *Flowers* 2–8, opening sequentially, fragrant; perianth segments ascending, green on keel, (7–)9.5–11.5 cm × 4–6 mm; perianth tube green, (6–)7.5–12 cm; staminal cup white with small yellow-green eye, funnelform, 2–2.8 × ca. 3 cm, margin with one or two prominent lacerate projections between the free filaments; free filaments slightly curved, inserted on a flat base, green in distal half but fading to white proximally, (2.5–)3.5–4.5 cm; anthers 1.3–2 cm, pollen yellow; style green in distal half, fading to white proximally, 13–22 cm; ovary pyriform, 15–24 × ca. 10 mm; ovules 5–9 per locule. *Fruit* pyriform (immature). *Seeds* unknown. $2n=46$ (Flory 1976; Smith et al. 1994).

Hymenocallis puntagordensis, the small cup spider-lily, has been found along a roadside bordering disturbed pine flatwoods and along the banks of a railroad in a waste area in the vicinity of Punta Gorda, Florida (Fig. 6). It is possible that this species may occur in other areas of central and south Florida. Flowering and fruiting are known to occur in August and probably into September.

Distinguishing features are the small, funnelform staminal cup with distinct projections; an elongated, pyriform capsule; suberect, coriaceous, narrowly strap-shaped leaves; and ovoid bulb with an elongated neck. It is likely that specimens of *H. puntagordensis* have previously been misidentified as *H. latifolia* (Mill.) Roem. Plants that have densely multiflowered inflorescences, perianth tubes exceeding 10 cm long, and long strap-shaped leaves bear a striking resemblance to *H. latifolia*. However, a closer examination reveals that the small staminal cup margin has prominent projections, the pollen is yellow, the ovaries are large and pyriform with up to nine ovules per locule, and the leaves are narrowly strap-shaped. *Hymenocallis latifolia*, in contrast, has a staminal cup without prominent projections, orange pollen, an ovoid ovary with two or three ovules per locule, and leaves that may approach a decimeter in width.

Along the roadside in the border of the disturbed flatwoods were scattered individuals of *Pinus elliottii* Engelm., *Myrica cerifera* L., *Schinus terebinthifolius* Raddi and *Sabal palmetto* (Walter) Lodd. ex Schultes. The individuals of *Hymenocallis puntagordensis* were found along the slope of a drainage ditch in association with *Hymenocallis palmeri* S. Watson, *Paspalum notatum* Fluegge, *Dichromena latifolia* Baldwin, *Cyperus* spp., *Fuirena* sp., *Ludwigia octovalvis* (Jacq.) P.H. Raven, *Sagittaria lancifolia* L., and *Pontederia cordata* L. South of Punta Gorda, *Hymenocallis puntagordensis* grew on fill along a railroad track bordered by *Pinus elliottii* Engelm. var. *densa* Little & Dorman, *Schinus terebinthifolius* Raddi, and *Myrica cerifera* L. The groundcover included such species as *Cyperus ligularis* L., *Paspalum urvillei* Steud., *Aristida*

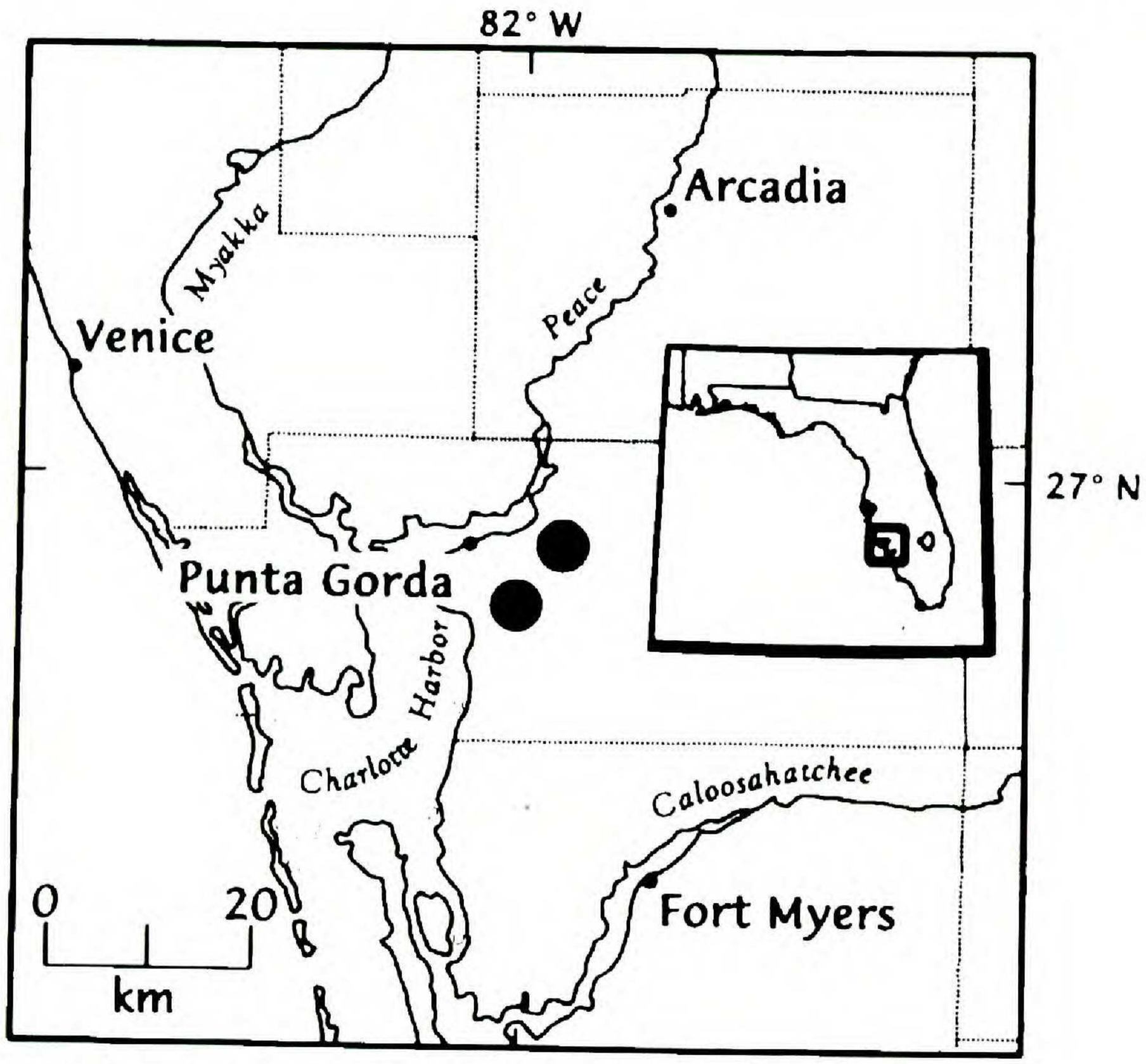

FIG 6. Distribution of *Hymenocallis puntagordensis*.

gyrans Chapm., *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult. and *Conyza canadensis* (L.) Cronquist, all of which are colonizers of disturbed sites.

We regard the information that we have presented on *Hymenocallis puntagordensis* as preliminary. As opportunities arise, we plan to gather more information about its morphology, distribution, and relationships. One question to be investigated further is the native habitat of the species. We have so far found it only in disturbed sites, leading to the suspicion that it may not be native to Florida. Nevertheless, we believe it is native because of the large pyriform ovary with 5–9 ovules per locule, the yellow pollen, and the funnelform staminal cup with lacerate margin, characteristics of the native Florida species in Traub's Henryae alliance. We have encountered some plants that have flowers that are remarkably similar to those observed in *Hymenocallis palmeri*, a community associate. We would appreciate any information about additional populations of this species from collectors of *H. puntagordensis* in SW Florida.

Representative specimens examined: U.S.A. **FLORIDA. Charlotte Co.:** E of jct. of US 17 & CR-74 along 74, 10 Aug 1993, *Smith & Garland 1625* (FSU); S of Punta Gorda along US 41 near railroad tracks, 12 Aug 1995, *Smith & Garland 1665* (FSU).

After this article was reviewed, and it was revised and resubmitted for publication, we became aware of a paper by Laferriere (1996) in which he republishes several Traub names—*Hymenocallis choctawensis* and *H. puntagordensis*, as well as *H. henryae, H. moldenkiana*, and *H. palusvirensis*,—because Traub's holotypes are multiple sheets rather than the "single specimen" required by the Code. We question whether this is necessary.

Large, hard-to-press plants, such as palms and fleshy amaryllids, may require more than one sheet (or a box, or a formalin jar) for a diagnostic specimen. Molloy et al. (1992a) discussed this problem and proposed a modification of Article 9.1 of the Code that would allow a holotype, lectotype, or neotype to consist "of more than one herbarium sheet or equivalent, so long as all parts come from a single gathering or are stated in the protologue to have been collected from the same individual at different times" (Molloy et al. 1992b; Greuter & McNeill 1993). Though this proposal is still being studied by a Special Committee on Lectotypification, it drew broad support at the Tokyo Botanical Congress in 1993 (McNeill 1993), and this broad definition of "single specimen" could be applied under the present Code.

We have carefully studied the type specimens of each of these species and are certain that the multiple sheets in each holotype represent parts of a single plant. We believe this because individual sheets represent various plant parts such as the scape, leaves, and individual flowers of an inflorescence. It is rather easy to visualize the assemblage of all the various parts into a single plant. For example, there is only one scape per specimen, and the total number of flowers on all sheets matches that expected for a single plant of each species. Further supporting our concept of a single plant for each holotype is that Traub (1962) himself referred to each holotype as a single specimen, and the date of collection on all sheets of a single type specimen is the same. We, therefore, believe that the republication of these names by Laferriere (1996) is not strictly necessary, and may even be harmful by making diagnostic parts of a single plant, formerly part of the holotype, nomenclaturally irrelevant.

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